

SC6000 Controller

QUICK REFERENCE GUIDE



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NOTE

For further details on product installation, see the complete Reference Manual available on the configuration CD-ROM included with this product.

SC6000-1200 STANDARD MODEL



Figure A

① Connector Panel



Figure B

- | | |
|-----------------------------------|--------------------------|
| ① Power ON and Communication LEDs | ④ Programming Keypad |
| ② LCD Display | ⑤ Connector Panel Legend |
| ③ Status LEDs | |

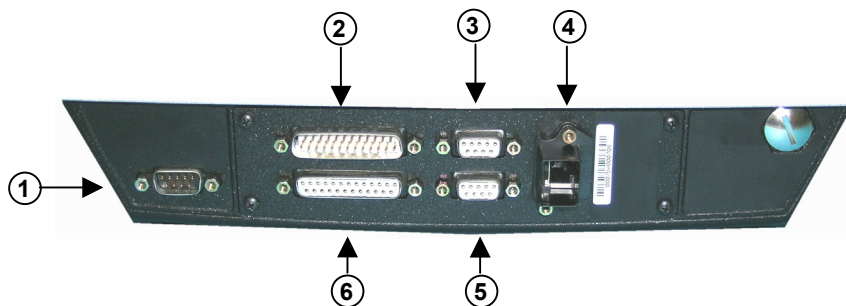


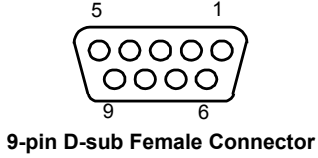
Figure C

- | | |
|----------------------------|---------------------------------|
| ① Modem Connector | ④ Ethernet Connector |
| ② Power/Net Connector | ⑤ Auxiliary Interface Connector |
| ③ Main Interface Connector | ⑥ Extended I/O Connector |

Electrical Connections

The SC6000 is designed to easily connect to the PWO power supply through two standard accessory cables. All system cabling is concentrated at the PWO except for some Host connections and the Auxiliary interface for SC6000 configuration using a laptop PC.

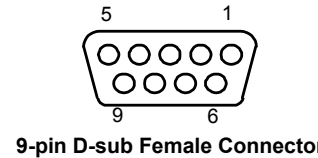
The following connector pinouts are given for reference.

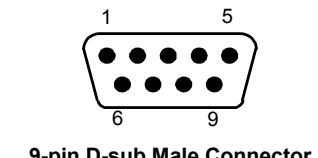
MAIN INTERFACE			
Pin	RS232	RS485 Full Duplex	
2	TX	TX485 +	
3	RX	RX485 +	
5	GND_ISO	GND_ISO	
7	CTS	RX485 -	
8	RTS	TX485 -	




CAUTION

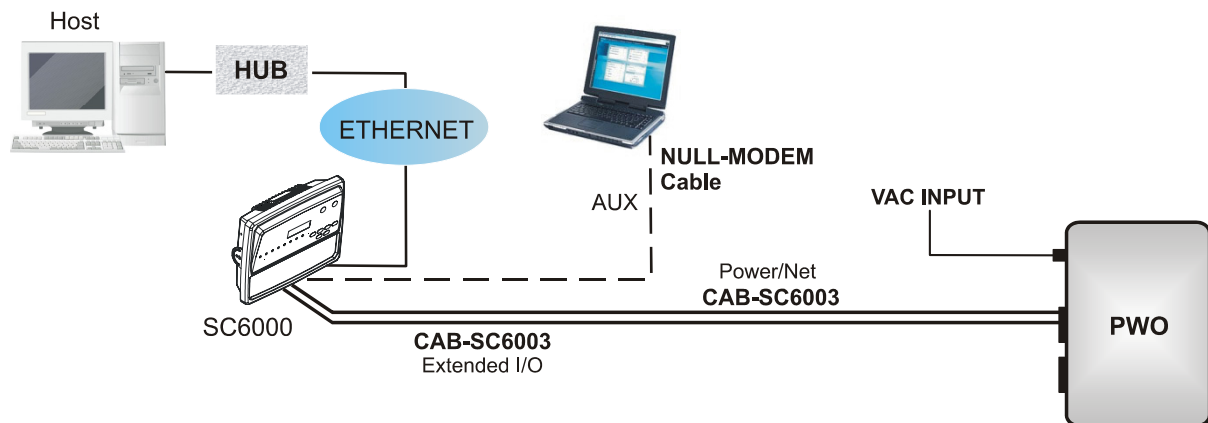
Do not connect GND and GND_ISO to different (external) ground references. GND and GND_ISO are internally connected through filtering circuitry which can be permanently damaged if subjected to voltage drops over 0.8 Vdc.

AUXILIARY INTERFACE			
Pin	Name	Function	
2	TX	Transmit	
3	RX	Receive	
5	GND	Ground	

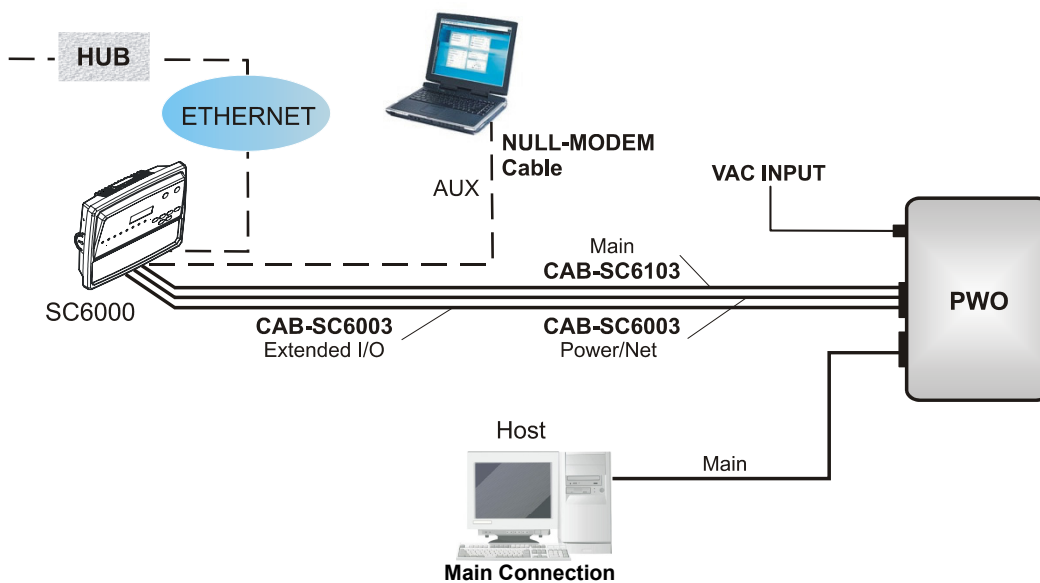
MODEM CONNECTOR			
Pin	Name	Function	
1	CD	Carrier detect	
2	RX	Receive	
3	TX	Transmit	
4	DTR	Data terminal ready	
5	GND	Ground	
6	DSR	Data set ready	
7	RTS	Request to send	
8	CTS	Clear to send	
9	RI	Ring indicator	

ETHERNET CONNECTOR			
Pin	Name	Function	
1	TX +	Transmitted data (+)	
2	TX -	Transmitted data (-)	
3	RX +	Received data (+)	
6	RX -	Received data (-)	
4, 5, 7, 8	N.C.	Not connected	

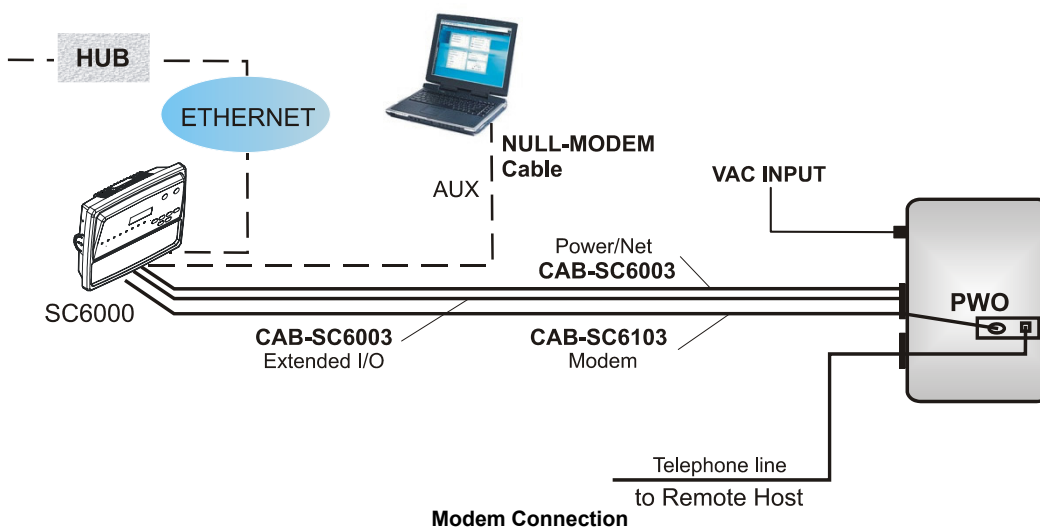
Typical Layouts



Ethernet Connection

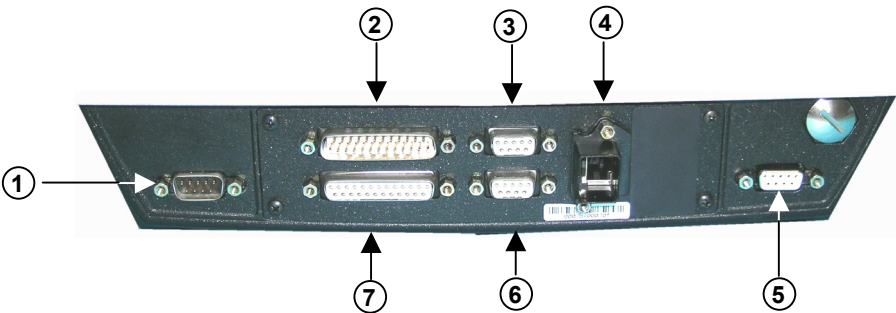


Main Connection



Modem Connection

SC6000-1211 PROFIBUS MODEL



SC6000 Profibus Connector Panel

- ①

Modem Connector
- ②

Power/Net Connector
- ③

Main Interface Connector
- ④

Ethernet Connector
- ⑤

Profibus Connector
- ⑥

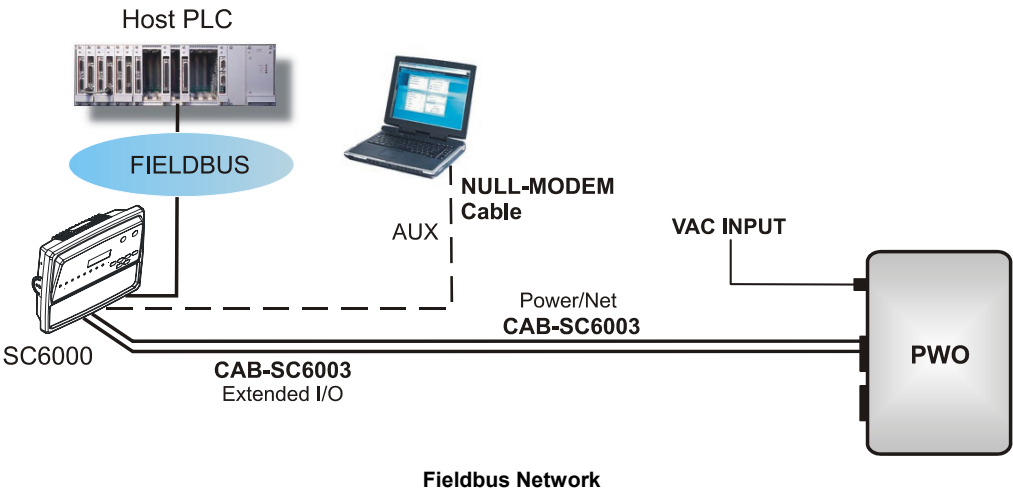
Auxiliary Interface Connector
- ⑦

Extended I/O Connector

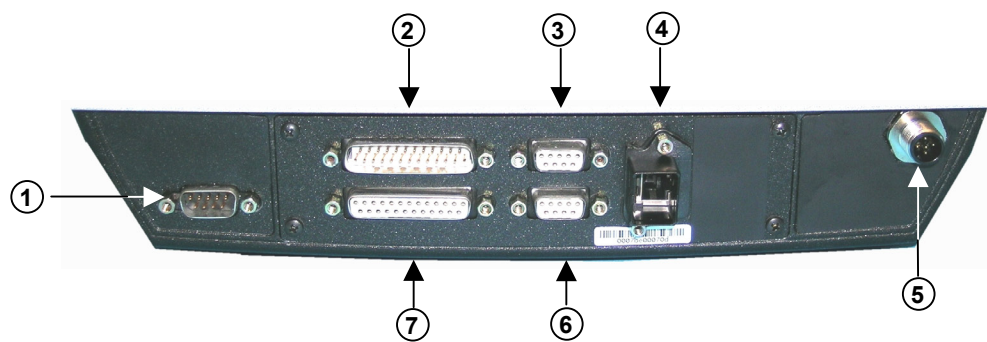
PROFIBUS CONNECTOR			
Pin	Name	Function	<div><div><div>51</div><div>96</div></div><div>9-pin D-sub Female Connector</div></div>
1	Shield*	Shield, protective ground resp.	
2	N.C.	Not connected	
3	B-LINE (Rx/D/TxD-P)	Received/Transmitted data-P	
4	CNTR-P**	Repeater control signal	
5	DGND	Data ground (M5V)	
6	+5 V	Voltage plus (P5V)	
7	N.C.	Not connected	
8	A-LINE (Rx/D/TxD-N)	Received/Transmitted data	
9	CNTR-N**	Repeater control signal	

* signal is optional

** signal is optional; RS485 level



SC6000-1215 DEVICENET MODEL



SC6000 DeviceNet Connector Panel

- ① Modem Connector

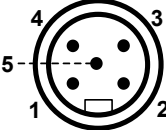
② Power/Net Connector

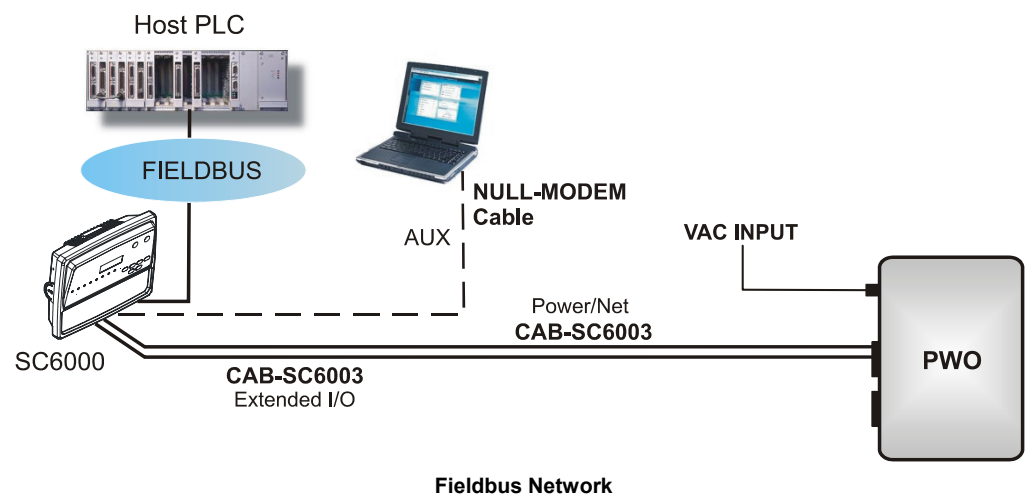
③ Main Interface Connector

④ Ethernet Connector
- ⑤ DeviceNet Connector

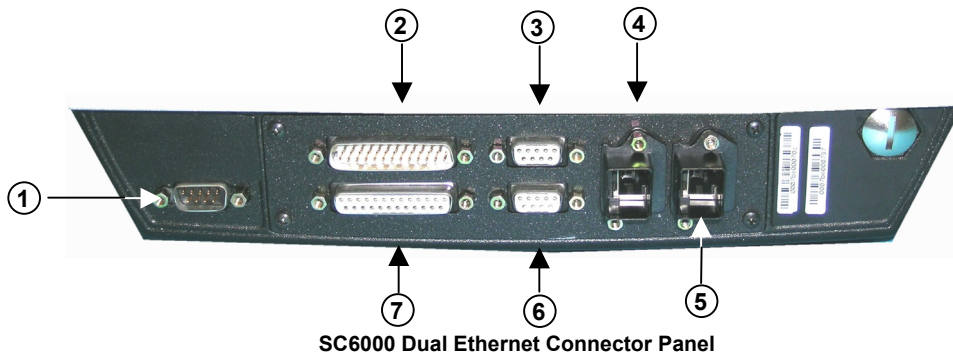
⑥ Auxiliary Interface Connector

⑦ Extended I/O Connector


DEVICENET CONNECTOR				
Pin	Name	Function	 5-pin male DeviceNet Connector	
2	V+	Supply voltage – positive pin		
5	CAN_L	CAN bus data line – L		
1	SHIELD	Shield		
4	CAN_H	CAN bus data line – H		
3	V-	Supply voltage – negative pin		

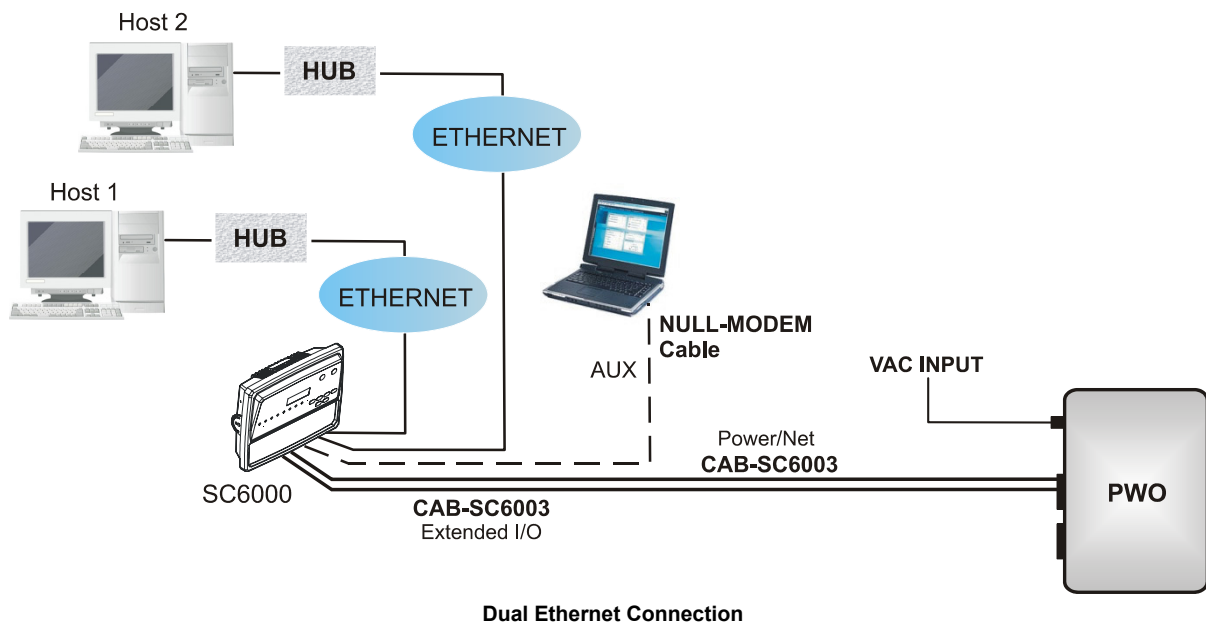


SC6000-1230 DUAL ETHERNET MODEL



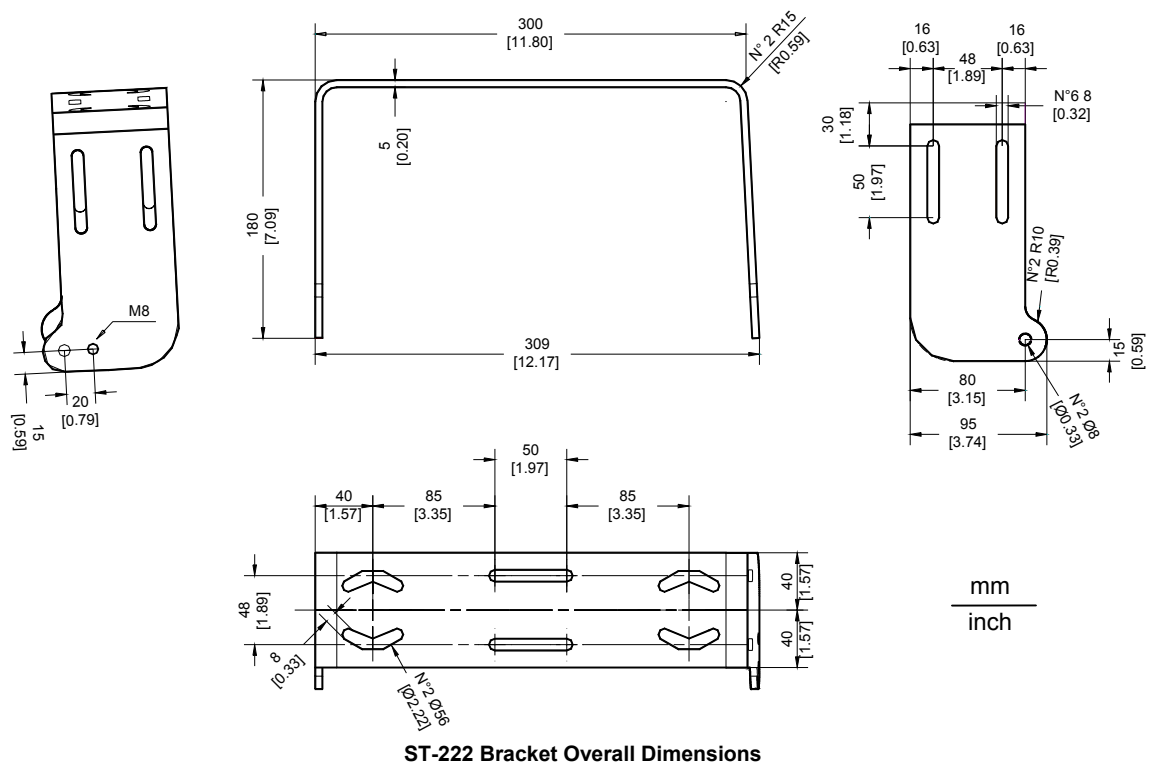
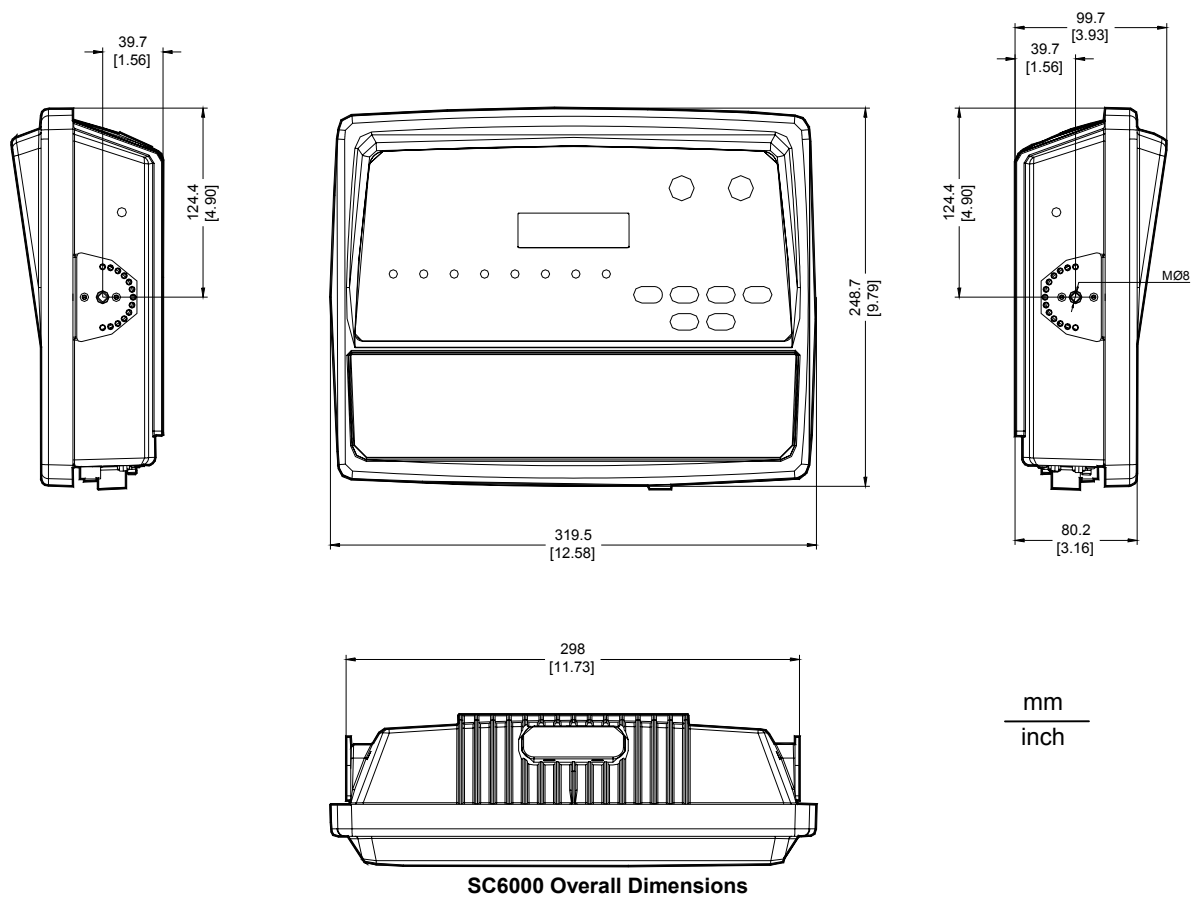
- | | |
|----------------------------|---------------------------------|
| ① Modem Connector | ⑤ Second Ethernet Connector |
| ② Power/Net Connector | ⑥ Auxiliary Interface Connector |
| ③ Main Interface Connector | ⑦ Extended I/O Connector |
| ④ Ethernet Connector | |

ETHERNET CONNECTOR			
Pin	Name	Function	 <p style="text-align: center;">RJ45 Modular Connector</p>
1	TX +	Transmitted data (+)	
2	TX -	Transmitted data (-)	
3	RX +	Received data (+)	
6	RX -	Received data (-)	
4, 5, 7, 8	N.C.	Not connected	



COMMON FEATURES

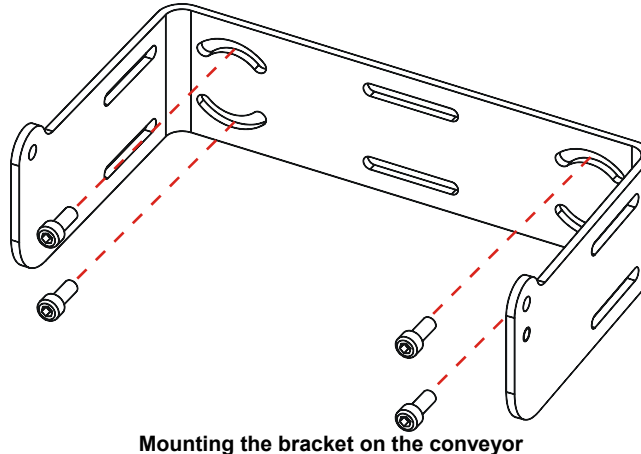
Overall Dimensions



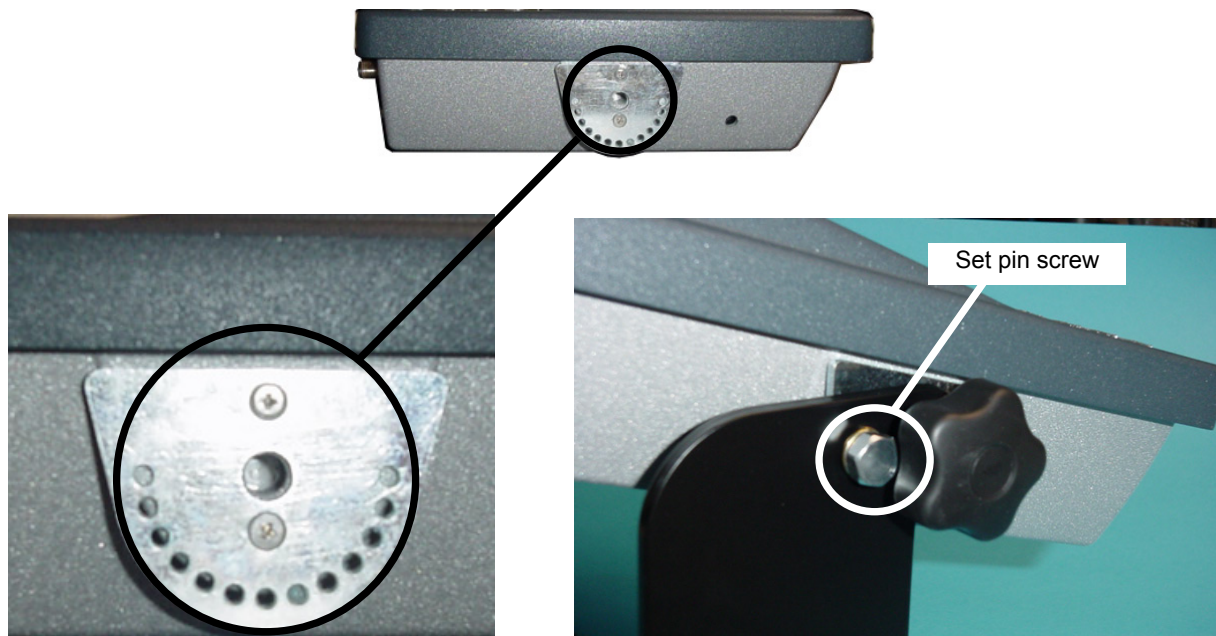
Mechanical Installation

To mount the SC6000 Controller on the reading station frame proceed as follows:

- 1 Mount the bracket on the reading station frame: the slots on the bracket will help obtain the best positioning. When working in environments characterized by strong vibrations, set the screws as close as possible to the bracket edges, see the figure below.
- 2 Tighten the ST-222 bracket to the reading station frame using the screws and washers.



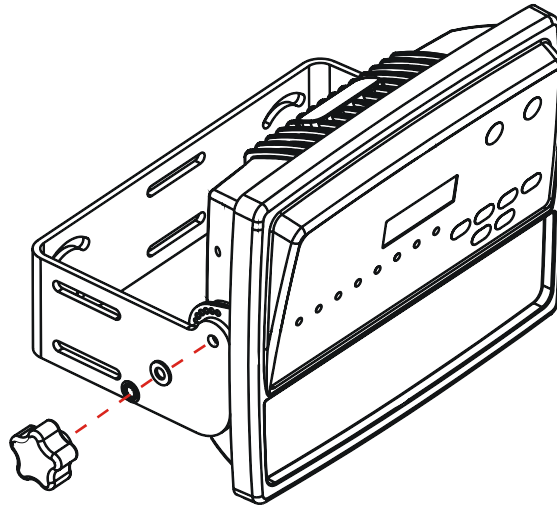
- 3 Position the SC6000 Controller at the top of the bracket: make sure the two large round openings coincide to the ones located at the edges of the SC6000 Controller.
- 4 While supporting the SC6000 Controller, rotate the whole device until it is aligned for the best viewing position, then insert the set pin screw with locking washer until it inserts into one of the small positioning holes located on the terminal bracket.



SC6000 Controller Side View with Punched Steel Ring and Relative Set Pin Screw

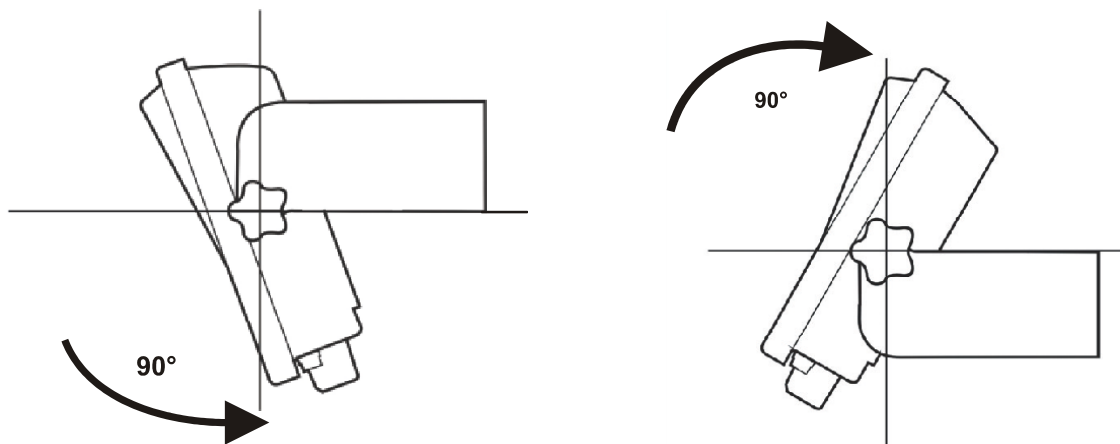
The specially punched steel ring has been designed to obtain the most precise rotation possible in terms of angle calibration, steadiness and consequent absence of torque between both sides of device.

- 5 Place a locking washer and then a flat washer onto each knob. Tighten the SC6000 Controller to its bracket by screwing the knobs into their holes - one on each side.



Mounting the SC6000 Controller on the bracket

The SC6000 Controller can rotate on its mounting bracket up to 90° with respect to the mounting bracket position. See figure below for suggested positions:



Suggested Mounting Positions

Electrical Installation

To make electrical connections to your SC6000 controller proceed as follows:

1. Connect the SC6000 controller to the PWO by means of the appropriate accessory cables for your application.
2. Provide correct and complete system cabling through the PWO according to the signals (Lonworks, encoder P.S., etc.) necessary for the layout of your application. Refer to the PWO Installation Manual for details.

Software Installation

To install Genius™, proceed as follows:

- 1) Turn on the PC that will be used for configuration (Windows 98, NT or XP);
- 2) Insert the Genius™ CD-ROM;
- 3) Wait for the CD to autorun and follow the installation procedure.
- 4) See the Reference Manual for Software Configuration procedures.

Accessories

The following accessories are used to build up a reading station based on SC6000 (the scanner-related accessories are not included):

Name	Description	Part Number
CAB-SC6003	25p cable SC6000 to PWO, 3 m (for Power/Net & Extended I/O connections)	93A051293
CAB-SC6103	9p cable SC6000 to PWO, 3 m (for Main and Modem connections)	93A051294
CAB-PWO 03	17p cable PWO to PWO, 3 m (for redundancy)	93A051295
PWO-480	Power&Connect system, 480W	93ACC1767
Modem	INSYS Modem 56K	93A051294

LED Indicators



Figure 1 - LEDs Description

① Power ON and Communication LEDs

② Status LEDs

SYSTEM SIGNAL LEDs			
Name	Color	State	Function
Power ON	Green	ON OFF	SC6000 Powered No Power
Tx Data	Green	Blinking OFF	Transmitting Data on MAIN No Data Transmission
Rx Data	Green	Blinking OFF	Receiving Data on MAIN No Data Reception
Ethernet	Red	ON OFF	Ethernet Line Connected No Ethernet Line Connected
PS	Yellow	ON OFF	Presence Sensor Active Presence Sensor Not Active
PS Aux	Yellow	ON OFF	Presence Sensor Active Presence Sensor Not Active
Tach	Yellow	Blinking OFF	Encoder Active Encoder Not Active
Network	Red	ON OFF	Lonworks OK Lonworks Error

SYSTEM EVENT STATUS LEDs			
Name	Color	State	Function
Warning	Red	ON OFF	Scanner Cluster Failure Scanner Cluster OK
Status OK	Green	ON OFF	Controller Status OK Controller Failure

Available Models

SC6000 - 1XXX

{
 200 = Standard
 211 = Profibus
 215 = DeviceNet
 230 = Dual Ethernet

Keypad and Display

The SC6000 keypad allows entering a menu to select one of the functions described in the following paragraphs.

STANDARD MODE

Upon startup, the diagnostic mask window is visualized by default. Using the UP and DOWN keys it is possible to scroll the other windows following this order:

- 1) Diagnostic Mask Window
- 2) Reading Performance Window
- 3) Reading Mask Window
- 4) I/O Status Window
- 5) System Info Window
- 6) Last Codes & Read Mask
- 7) Alarms

Diagnostic Mask Window (Default Window)

This window illustrates the status of each node (of each scanner of the cluster) according to the following convention:

" _ "	From the startup the node NID has not been discovered.
" ? "	At the startup of the system the NID has been discovered but the node does not answer to the master.
" * "	The node status is OK.
" ! "	The node returns an error code to the diagnostic Laser Off.
" & "	The node returns an error code to the diagnostic Motor Off.
" % "	The node is in monitor mode.
"Scan A B C"	The specific scanners (indicated by each letter) have been discovered.
"Status ***"	The scanner status is ok.
"Empty scan cluster"	No scanner has been discovered within the cluster.
"No slave expected"	A scanner not expected by the system configuration has been discovered.
"Energy Saving"	The Energy Saving feature (see Genius™ program Help On-Line) has been activated.

Reading Performance Window

This window displays the following data:

- Number of the processed parcels
- Good Read Rate
- No Read Rate
- Multiple Read Rate

Reading Mask Window

This window indicates the node that performed a reading of the codes enabled on the master.

The following indicators are used:

- " * " The node read a barcode enabled on the master.
- " _ " The node read no barcode.

I/O Status Window

This window provides data concerning the conveyor speed and the digital input/output status.

System Info Window

This window provides information about the software release.

Last Codes & Read Mask

This window is available only when enabling the "Last Code & Reading Mask Window" parameter from the Genius™ configuration program.

The following data are shown:

- Window title
- Last read code
- List of nodes that performed a reading of the codes enabled on the master
- Statistics (No Read rate, Partial Read rate, Multiple Read rate) calculated on the last 100 codes or in continuous mode depending on the parameter selection.

Alarms

This window is available only when enabling the related parameters from the Genius™ configuration program. It shows four alarms generated by the SC6000 or by the network. All alarms are ordered according to their priority (failure messages have priority over warning messages). A failure message causes the Warning LED to be always on, while a warning message causes the LED blinking.

REDUNDANCY MODE

When working in a redundant system, the SC6000 displays different windows according to its redundancy role (refer to the SC6000 help on-line for further details).

SC6000 Active Controller Window

The SC6000 working as active controller displays the diagnostic mask window, as if it is working in a single master network.

SC6000 Stand-By Controller Window

This window is displayed on the SC6000 working as stand-by controller. It illustrates the topology redundancy role of the controller:

- "Protecting/Stand-by" or "Working/Stand-by"

MENU MODE

For security purposes, the menu mode is entered by pressing the ENTER and MENU keys at the same time.

Through this menu, it is possible to perform the following:

- Main Parameter Setting: IP address, Netmask, Gateway address (for all models), Profibus address (for Profibus models), DeviceNet address (for DeviceNet models), supplementary IP address, supplementary Netmask, supplementary Gateway address (for Dual Ethernet models).
These parameters may be set through the Genius™ program.
- Date&Time setting;
- DARP™ (Datalogic Automatic Replacement Procedure);
- CASP™ (Cluster AutoSetup Procedure): this procedure allows automatic address assignment to the scanner cluster nodes. This operation can also be performed by starting up the system while pressing the SETUP key.
- Last Codes: this window is available only when enabling the "Show Last Code Window" parameter from the Genius™ configuration program. It displays the last 10 read codes. Each code can be visualized through the UP and DOWN keys.

Datalogic Automatic Replacement Procedure (DARP™)

When SC6000 is used as a SYNCHRONIZED or MULTIDATA Master (Topology Role parameter), a DARP™ backup procedure must be performed to automatically manage scanners and SC6000 replacement in case of failure (DARP™ Restore). Once the system configuration has been completed as described in par. 3.2 of the SC6000 Reference Manual, launch the DARP™ backup by one of the following methods:

Using Genius:

Click on the DARP™ backup icon in the Device Network area. You will be prompted to select the desired backup option (complete, all slaves, controller, or each single scanner).

Using the SC6000 keypad:

1. Press the <Ent> and <Menu> keys simultaneously to enter the Menu;
2. Use the <arrow> keys to move within the menu items;
3. In the <System> menu choose <Backup> and select the desired backup option (complete, all scanners, controller, or each single scanner).

The SC6000 Controller will store the complete system configuration on the Compact Flash card.

If a slave scanner has to be replaced, the corresponding configuration (node address, code configuration, PackTrack™ configuration, etc.) is automatically downloaded by the SC6000 into the new scanner at the next system startup.



NOTE

All replacement scanners must be set to the factory default values BEFORE installing.

In case of SC6000 failure, the complete system configuration can be recovered from the damaged SC6000 Compact Flash: by simply installing the old Compact Flash in the new SC6000, the system configuration is automatically restored and the reading station is ready to start working again.



CAUTION

Before removing the Compact Flash card, switch the SC6000 Controller off.

In case of SC6000 failure proceed as follows:

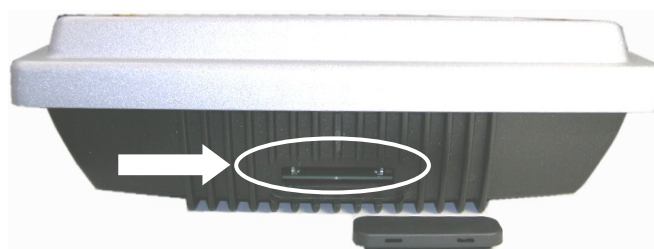


Figure 2 - Removing the Compact Flash

1. Disconnect the device.
2. Remove the rubber cover of the Compact Flash slot using a screwdriver.
3. Remove the Compact Flash.
4. Connect a new SC6000 to the system.
5. Insert the Compact Flash card.



CAUTION

Make sure not to insert the Compact Flash card upside down. Carefully insert it in the guides, so that it will not fall inside the device. Gently push it into the slot.

6. Start up the system.

The system configuration is automatically restored and the reading station is ready to start working again.

Automatic Scanner Replacement (ASR)

When SC6000 is used in a network of DS8100 or DX8200 scanners, (Topology Role parameter = Other; Device Assignment parameter = Controller Lon Old8K), an ASR backup procedure must be performed to automatically manage scanners and SC6000 replacement in case of failure (ASR Restore).



NOTE

In order for the ASR procedure to work, all slave scanners must have been installed according to the procedure in par. 3.3 of the SC6000 Reference Manual.

Once the system configuration has been completed, launch the ASR backup by one of the following methods:

Using Genius:

Click on the ASR backup item in the Device Menu. You will be prompted to select the desired backup option (complete, all slaves, controller).

Using the SC6000 keypad:

4. Press the <Ent> and <Menu> keys simultaneously to enter the Menu;
5. Use the <arrow> keys to move within the menu items;
6. In the <System> menu choose <Backup> and select the desired backup option (complete, all scanners, controller).

The SC6000 Controller will store the complete system configuration on the Compact Flash card.

If a slave scanner has to be replaced, the corresponding configuration (node address, code configuration, PackTrack™ configuration, etc.) is automatically downloaded by the SC6000 into the new scanner at the next system startup.



NOTE

All replacement scanners must be set to the factory default values BEFORE installing.



NOTE

If the SC6000 controller replaces an SC8000 controller within the network, (Topology Role parameter = Other; Device Assignment parameter = Controller Lon SC8000), refer to the "Replacing SC8000 with SC6000-PWO.pdf" document for details.

Compliance

Power Supply

This product is intended to be installed by Qualified Personnel only.

This device is intended to be supplied by either a UL Listed or CSA Certified Power Unit marked 'Class 2' or 'LPS', output rated 15 - 30 V dc , minimum 0.6 A.

WEEE Compliance



Technical Features

ELECTRICAL FEATURES			
Supply voltage	15 to 30 Vdc		
Power consumption	6.5 W typical 9 W Max. (including startup current)		
Communication Interfaces	Main (isolated)	Auxiliary	Modem
	RS232, RS485 full-duplex	RS232	RS232
	Other		
	Lonworks	1,25 Mb/s	
	Ethernet	10 or 100 Mb/s	
	DeviceNet	125 or 250 Kb/s	
	Profibus	12 Mb/s	
Inputs (optocoupled NPN or PNP)	Encoder, PS, PS Aux, 3 polarity insensitive optocoupled inputs		
Outputs (optocoupled)	6 optocoupled outputs, 3 relay control inputs		
USER INTERFACE			
LCD Display	4 lines by 20 characters LCD		
Keypad	6 keys		
LED indicators	Power ON	PS	Controller Scanners
	TX data	PS Aux	
	RX data	TACH	
	Ethernet	Networks	

SOFTWARE FEATURES	
Configuration modes	Genius™ utility program
Parameter storage	Non-volatile extractable FLASH card

ENVIRONMENTAL FEATURES	
Operating temperature	0° to +50 °C (+32° to +122 °F)
Storage temperature	-20° to +70 °C (-4° to +158 °F)
Humidity	90% non condensing
Vibration resistance	IEC 68-2-6 test FC 14 mm @ 2 to 10 Hz; 1.5 mm @ 13 to 55 Hz; 2 g @ 70-200 Hz; 2 hours on each axis
Shock resistance	IEC 68-2-27 test EA 30 g; 11 ms; 3 shocks on each axis
Protection class	IP64*
PHYSICAL FEATURES	
Mechanical dimensions	320 x 250 x 90 mm (12.6 x 9.84 x 3.54 in)
Weight	3.3 kg. (7.26 lb)

*with Harting RJ Industrial push pull Ethernet connector.

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SC6000-XXXX Universal Controller e tutti i suoi modelli
and all its models
et tous ses modèles
und seine modelle
y todos sus modelos

sono conformi alle Direttive del Consiglio Europeo sottoelencate:
are in conformity with the requirements of the European Council Directives listed below:
sont conformes aux spécifications des Directives de l'Union Européenne ci-dessous:
der nachstehend angeführten Direktiven des Europäischen Rats:
cumple con los requisitos de las Directivas del Consejo Europeo, según la lista siguiente:

89/336/EEC EMC Directive	e	92/31/EEC, 93/68/EEC	emendamenti successivi
	and		further amendments
	et		ses successifs amendements
	und		späteren Abänderungen
	y		sucesivas enmiendas

Basate sulle legislazioni degli Stati membri in relazione alla compatibilità elettromagnetica ed alla sicurezza dei prodotti.
On the approximation of the laws of Member States relating to electromagnetic compatibility and product safety.
Basées sur la législation des Etats membres relative à la compatibilité électromagnétique et à la sécurité des produits.
Über die Annäherung der Gesetze der Mitgliedsstaaten in bezug auf elektromagnetische Verträglichkeit und Produktsicherheit entsprechen.
Basado en la aproximación de las leyes de los Países Miembros respecto a la compatibilidad electromagnética y las Medidas de seguridad relativas al producto.

Questa dichiarazione è basata sulla conformità dei prodotti alle norme seguenti:
This declaration is based upon compliance of the products to the following standards:
Cette déclaration repose sur la conformité des produits aux normes suivantes:
Diese Erklärung basiert darauf, daß das Produkt den folgenden Normen entspricht:
Esta declaración se basa en el cumplimiento de los productos con las siguientes normas:

EN 55022 (Class A ITE), August 1994:	LIMITS AND METHODS OF MEASUREMENTS OF RADIO DISTURBANCE
Amendment A1 (Class A ITE), October 2000:	CHARACTERISTICS OF INFORMATION TECHNOLOGY EQUIPMENT
EN 61000-6-2, October 2001:	ELECTROMAGNETIC COMPATIBILITY (EMC)
	PART 6-2: GENERIC STANDARDS - IMMUNITY FOR INDUSTRIAL ENVIRONMENTS

Lippo di Calderara, 08.09.05

Ruggero Cacioppo

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Quality Assurance Laboratory Manager